ABSTRACT OF TAPE MADE BY DOUGLAS PERHAM AND ERV RASMUSSEN
July, 1963, at the New Almaden Museum, New Almaden

Tape 2, Side 2

Index

1-41 Conclusion of article, "Telegraphy, Waves without Wires," written by H.P. Veider, read by Perham. Describes in detail Poulsen equipment, San Francisco and San Bruno Point stations. Largest antenna in the world.

42 Items 183-186. Kennedy receivers. Kennedy made fine, long wave receivers, 1920s in Los Altos. Dr. Leonard F. Fuller financed the Colin B. Kennedy Co. Built audio frequency amplifiers in 1921.

Item 187. Kolster receiver, made for federal government in Palo Alto (with P as suffix to serial number) and in Salt Lake City.

62 Paper from archives on Poulsen Telegraph Co. Dated Jan 18, 1919. Capitalized at $25,000,000. U.S. Navy bought Poulsen stations and rights for $1,600,000. Stock disposal discussed.

78 Items in Federal case--miscellaneous. Receivers, speakers.

Item 158. Federal call box. Very rare. Federal placed these beside Western Union call boxes in downtown area of San Francisco. By twisting a key, a coded message was sent and a Federal Telegraph boy would come to get your telegraph.

Item 194. Infradyne receiver.

Item 206. GE battery charger.

Item 207. Wagner battery charger. Vibrating, mechanical type.

123 X-ray tube collection. Perham's first interest in 1898. Imported from Germany, then made his own. One (in collection) with wooden base, made by Thos. Edison in Harrison Lamp Works in New Jersey. Perham installed this in doctor's office in Palo Alto in 1902, first X-ray in the area.

137 Paul Seiler Electric Works. Pioneer electrical contractor on lower Market Street, S.F. Repaired tubes; sold telegraph instruments, batteries, manufactured telephones, galvanometers. Young experimenters bought supplies from him. Perham worked for him. Active in wireless in 1898, out of business by 1910. University of California has some of his galvonometers. Some of his phones in Perham's phone collection.

Index

165 Item 212. Fluoroscopes. About 1900. One used with Edison's tube in doctor's office in Palo Alto. Discussion of source of energy for this--static machines, very high voltage, could throw a 24" spark.

182 Item 213. Coolidge transformer. Furnished light or heating element of X-ray tube.

186 Item 214. Ritter Dental X-ray unit. Became obsolete in 1915, as exceedingly dangerous. Discussion of dangers of early machines, burns and injuries due to X-rays. Dr. Arthur Erskine, first international president of the radiographers.
231 Work done for him by Perham.

235 RALPH M. HEINTZ INTERVIEWED BY ERV RASMUSSEN

Introduction: Heintz an amateur radio operator since 1906. Believed to be first man to receive a radio signal from an airplane, 1910, at Tanforan race track. 1921, graduated from Stanford, built radio equipment on commercial basis. Built the 100 watt transmitter with which Clifford Dow made first amateur contact between Hawaii and Mainland. Discussion of "firsts" for Signal Corps, Merchant Marine, police cars, submarines, airliners, Byrd expedition to Antarctic. Heintz exhibit due to his generosity.

255 Interview: 1892--born in St. Louis, Missouri. 1902--moved to Horsetown, California. 1905--moved to San Francisco. 1906--earthquake. Description of this. 1906--moved to Berkeley. Started wireless with his own spark coil, through help of Arthur Heim of Alameda. Laird, Leonard Fuller also early hams. Bay Counties Wireless, 1909-1912--amateur wireless club. Discussion of some early members. 1913--graduated from Lick High School. 1913--UC at Berkeley. 1917--in Signal Corps, overseas, flying Hanley Paige bombers, at night, working in lab in daytime, with British. Worked with Robinson, inventor of cross loop direction finding system for aircraft. Worked at Farnborough.

394 1920--graduated from Stanford in engineering/chemistry. 1920--Standard Oil Company. 1921--"Ralph M. Heintz, Scientific Instruments," at 606 Mission Street. Moorehead Laboratories at 638-640. Mission Street. Also Atlantic and Pacific and the Colin B. Kennedy Companies. De Forest was with the Atlantic and Pacific Company, had an amateur radio telephone, an OT 10. Heintz knew de Forest and Moorehead well. Earl Borsch discussed.

Index

452 1922--partnership formed with brother-in-law, Heintz and ? Kohlmoos, 606 Mission Street. Built one of first broadcasting stations in Mexico, in Mazatlan. De Forest built one in Berkeley; KROW, KJBS discussed, both Built by Heintz.

487 Wireless Specialty Apparatus Co. in Grant Building, at 5th and Market Streets. Headed by Earl Ennis, later a radio columnist for the Chronicle. Equipped a Wright airplane with a transmitter in 1910 at Tanforan.

500 1907. Early wireless phones--McCarty's, American Wireless Telephone Company, operated by Cohen and Dwyer. Description of methods used.

519 Attempt to send voice transmission to an airplane flying. Description of apparatus used. Madame Tetrazzini was asked to sing into the horn. When she learned that a man in an airplane was supposed to hear her, she refused to sing, saying it must be witchcraft.

539 Discussion of McCarty's spark gap system. Had a continuous whine when he was not talking. May have been one of the earliest in the U.S. Herrold came later. First really successful CW phone was the Poulsen arc brought in by Cy Elwell.

560 1920--Heintz left 606 Mission. Bought out brother-in-law. Took in Jack Kauffman.

1923-1928. Heintz at 219 Atoma Street, S.F. 1929--built a building in South S.F. Robert Dollar Steamship Company bought control of Heintz company in 1929. Heintz made transoceanic equipment for 168 ships. Communication division of Heintz and Kauffman later became Globe Wireless, later American Cable and Radio, Mackay Radio and finally part of IT&T.

592 Patent on grid, so had to make a three element tube without the grid: birth of the gammatron. Discussion of breaking patent monopolies. Gamma plate. Built 1 kw transmitters.

611 On Europe trip Heintz found out about other three element oscillators: Sinding-Larsen in Norway, Robert Goddard in U.S. and Vrieland(?) all had made the three-element tube "work."

622 RCA sued Heintz's company for patent infringement. After Heintz's evidence, withdrew suit, licensed Dollar Co. on same basis as GE and others, about 1934-35.

Index

659 Story of Bill Eitel and Jack McCullough. Eitel, drove a grocery wagon, was a radio ham in Los Gatos, came to work for Heintz. McCullough came a bit later from a job selling Stutz automobiles. The three of them started making tubes, blew their own. 1934--Eimac founded, in an old store building. Heintz and Kauffman were first to use tantalum as a plate material as a getter, since use of getters was patented.

707 1937-1939. Heintz joined Bendix for project: use of polyphase high frequency power in aircraft. Heintz met Bill Jack at Bendix. Formed a company, Jack and Heintz, in Palo Alto at old hammer factory on Middlefield Road. Had difficulty with labor racketeers. Moved the company to Cleveland. Kaar Engineering now in the Jack and Heintz buildings.

773 Discussion present single side band communication systems. Use of electrolytic detector in early days. Comparison with Fleming valve and first de Forest tubes.

842 Item 1. H & K portable generator. Known as the "300." Part of polyphase equipment developed for aircraft. Two separate sets of windings, could be used single or polyphase. 300-400 watts, 360 cycle. Similar generator used by explorers John Henry Neer, Sir Hubert Williams at North Pole, Lincoln Ellsworth, Byrd.

This particular generator: Clyde de Vinna, chief cameraman at Metro Goldwyn Mayer, a ham operator. Bought gas engine generator, crystal controls transmitter, receiving equipment from Heintz. Maintained communication with Hollywood while filming "Trader Horn" in middle of Lake Victoria, Africa, "in one hop."

900 Other early hams: Colonel Foster in Carmel; Cliff Dow in Samoa; Lawrence Mart on Catalina Island. Equipment used.

954 Patent suit discussion: RCA impressed with tubes made by Heintz which were duplicates of non-de Forest tubes of other inventors. 34 years of monopoly--17 years under Armstrong patent, 17 years under de Forest patent.

35 Farnsworth's cold cathode tube, used as an oscillator. Traffic between San Francisco and Manila. A key invention, the basis of his electron multiplier.

57 End of Heintz Interview

Index

58 Item 241. 30 kw arc. Built at Federal Telegraph Co in Palo Alto in 1930. Designed by Dr. Leonard Fuller. Vertical arc, cast iron base. 600 volts dc. Also build 1000 kw arcs, driven at 600 volts. Used motor generator sets from street railway. 1930--experiments with 1000 kw arcs. Chinese government ordered them, but could not pay. One given to Stanford, where it was cut up and sold to junk man, during war. Other given to U.C. at Berkeley. Perham rewound the fields to Dr. Lawrence's specifications for the first cyclotron. Dr. Fuller made the arrangements.

152 Item 242. Federal antenna coupler. Book type, used on a ship.

180 Item 243. Detuning inductance for tuning. Frequency shift device.

Item 244. 8 large insulators from Mackay station.

256 Item 248. Mackay phaseometer unit . Built by Dr. Fuller. Nameplate says Newark, N.J., but made in Palo Alto. Main office was in New Jersey in 1930. 1932--Federal moved all operations to N.J. This was when the large arcs were given away--weighed 60 tons.

July 3, 1963. Continuation of Erv Rasmussen and Douglas Perham

282 Item 247. General Radio condenser.

Item 248. GR inductor. General Radio one of early companies, still in business. Pie wound coils; using wood as dialectric. GR variometer (item 265) one of their first pieces of apparatus. Typed label.

328 Item 250. 1000 cycle oscillator. By GR.

Item 252. GR wavemeter. First wavemeter within the amateur's means. GR also made crystal exciter units.

Item 256. 28 miscellaneous audio transformers. 1921--everyone building his own. E.S. Pridham designed an rf transformer with an iron core. Elwell criticized this; Pridham quit and went into the Magnavox Co.

386 1921-22. Radio broadcasting became popular. Couldn't buy a receiving set, but had to build your own or have someone build it for you. People stayed up most of the night, thrilled to hear WEAF in New York. 1925-27. Built 10 and 12 tube superheterodynes. Later, Atwater Kent and Paul Crosley, who

Index

started by making parts, began building full receiving sets.

413 Item 258. Crosley 62 receiver.

265a. General Radio large transmitting insulators. Used by Federal Telegraph Co. to support inductances and as lead in insulators, at Palo Alto station.

Item 269. 9 photos and documents. Dr. Fuller, Federal factory.

478 END OF TAPE 2, SIDE 2